impulses go, and in what ways the peripheral recep-
tive fields are projected, or what disabilities per-
formance tests disclose after certain operations, etc.
Complex interconnexions such as those between
hypothalamus and the pituitary gland require a firm
histological basis as a first step towards establishing
functional interaction.

In this general field of research to which Prof. Glees
himself has contributed valuable information he is
also a good guide. These sections, the leading ones
in the book, are accompanied by excellent anatomical
diagrams and describe the modern work in an easy,
fluent style. Briefly the book is best described as an
introduction to recent advances in the morphology
and physiology of the brain. In this sense it is
complete in its treatment of the facts and ideas that
have been advanced during the past twenty years.

RAGNAR GRANIT

STRESS AND ADAPTATION

The Stress of Life
By Dr. Hans Selye. Pp. xx + 324 + 7 plates. (London
and New York: Longmans, Green and Co., Ltd.,
1957.) 18s.

PROF. H. SELYE'S book is an attempt to give an
account of his concepts of stress and adaptation
for the general reader. It is perhaps scarcely to be
expected that one should find in it rigid definitions
and deductions. The method he uses is more impres-
sionistic and is illustrated with allusion and metaphor
rather than by tabulation of data. Nevertheless,
there are passages of some interest where he seeks
for definitions, for example, "*stress is the common
denominator of all adaptive reactions in the body*. This
is simple and true, but perhaps still too vague".
Later, "STRESS IS A STATE MANIFESTED BY
A SYNDROME . . ." (*sic*) and "The condition of
biologic stress is essentially an adjustment". Such
samples of the method of typography, discussion and
definition illustrate the characteristic empirical, as it
were non-logical, approach. The italics and capitals
are a sort of substitute for definition, warning one
not to ask such questions as whether a 'state' can be
an 'adaptation', and so on.

Certainly, the method allows the presentation of
many interesting points of view about the whole
subject of "adaptability, or *adaptation energy*", of
which "it is as though we had hidden reserves in the
body". The subject is such a challenging one and so
much neglected that any discussion is welcome.
Prof. Selye's treatment is, of course, that of an
endocrinologist; he sees the mechanisms of
adaptation in terms of a hormonal system, centring
on the pituitary. No doubt he would be the first to
admit that this system of mammals shows, in a
specialized form, reactions that are common to all
life. Within the framework of his system he con-
siders inflammation, arteriosclerosis and a long list of
diseases of adaptation, including nervous and mental
diseases and sexual derangements. Indeed, it is
difficult to avoid feeling that his concepts are so wide
that they include too much. Perhaps it is not fair
to blame this entirely on Prof. Selye. Adaptation is
an omnipresent and mysterious phenomenon, and yet
we have no adequate concepts for dealing with it.
One may sympathize with the conclusions of his final
discussion that there is need for a "new type of
medicine", but it is doubtful if this can be supplied
only by the endocrinologist, however long his list of
specific substances and hormones. J. Z. YOUNG

STATIONARY TIME SERIES

Statistical Analysis of Stationary Time Series
By Dr. Ulf Grenander and Prof. Murray Rosenblatt.
(Wiley Publication in Mathematical Statistics.)
Pp. 300. (New York: John Wiley and Sons, Inc.;
London: Chapman and Hall, Ltd.; Stockholm:
Almqvist and Wiksell, 1957.) 88s. net.

ANALYSTS of stationary time series tend to fall
into one of two groups. One prefers to express
the properties of the series in terms of its autocorrela-
tion structure; the other uses the periodogram or the
spectrum. Seeing that the results of one method can
be transformed by a Fourier analysis into the results
of the other it might have been supposed that the
'complete analyst' would use either, according to
convenience. But in general, this is not so, and there
is a good reason for it. The basic models studied by
autocorrelation methods are such that in general no
underlying periods in the strict sense exist as, for
example, in economics; those studied by spectral
analysis are more concerned with harmonic com-
ponents, as, for example, in engineering and the
physical sciences.

This book by Grenander and Rosenblatt is con-
cerned mainly with spectral analysis. It begins with
an account of stationary stochastic processes and the
analysis of parametric models; proceeds to problems
of estimation of the spectrum and the sampling
distribution of spectral estimates; and concludes
with problems in linear estimation and some assorted
topics of a related nature. The examples are drawn
mainly from the physical sciences—optics, turbulence
and ocean waves. There are about fifty exercises, a
six-page appendix on complex variable theory and a
bibliography.

The statistical problems which arise in the analysis
of time series are truly formidable and in several
ways require techniques which are not familiar to
many statisticians. It is accordingly very useful to
have this unified treatment of the spectral approach.
The authors, noting that existing literature is charac-
terized by a certain lack of precision, have devoted a
good deal of space to rigorous mathematical proofs.
This, it must be admitted, makes the book rather
difficult reading; but then it is a difficult subject,
and one applauds their willingness to make assump-
tions which would be restrictive to a mathematician
seeking complete generality but are no limitation so
far as concerns practical applications.

In one respect the ideas advanced in the book will
require further consideration. Most models used
for the study of time series depend only on a finite
number of parameters. The authors feel that the
estimation of the spectrum is a better approach
because it contains an infinity of parameters and
hence provides a method of greater generality. But
the estimates to which it leads are much less precise,
and, as the authors themselves point out, any good
estimate of the spectral density is biased. For long
series such as occur in physics this may not be
serious; but for economics it is fatal, even if (which
is not the case) the spectral density could be given
an interpretation. It remains to be seen, in some
subjects at least, whether the spectral approach may
not have the wraith-like quality suggested by its
name.

Nevertheless, this is a useful book and should form
a normal part of the time series analyst's equipment.

M. G. KENDALL